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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|--|------------------|
| 10/670,812 | 09/25/2003 | James Fraivillig | 07009.011003 | 7754 |
| <div>7590 02/20/2007 Jonathan P. Osha ROSENTHAL & OSHA L.L.P. Suite 2800 1221 McKinney Street Houston, TX 77010</div> | | | <div>EXAMINER TRINH, MINH N</div> <div>ART UNIT PAPER NUMBER 3729</div> | |
| SHORTENED STATUTORY PERIOD OF RESPONSE | | MAIL DATE | DELIVERY MODE | |
| 3 MONTHS | | 02/20/2007 | PAPER | |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/670,812

Applicant(s)

FRAIVILLIG, JAMES

Examiner

Minh Trinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-23 is/are pending in the application.
- 4a) Of the above claim(s) 13-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 6-12 is/are rejected.
- 7) ☒ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
2. Claims 1-2 and 6-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fraivillig (6,015,607) in view of Hoffmeyer (5,757,073) and Andrus et al (6,129,260).

Fraivillig discloses a method for manufacturing a PCB bonded to a heat sink comprising: a first step of adhering a conductive layer to a first surface of a bond film using a first adhesive layer to produce a circuit substrate (as discussed in the abstract, or discussion at col. 5-6); Hoffmeyer discloses a second step of laminating the heat sink 22 to a second surface of the bonded film 26 or 28 of the printed circuit 50 using a second adhesive layer 26 (see Fig. 1, and the discussion at col. 5, lines 48-52), further, Andrus et al disclose the bonding material and its properties including partially activating

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the adhesive layer such that the conductive layer is tack bonded to its associated surface or the like (see cols. 2-3, lines 1-20, and col. 4). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to employ the teaching of Hoffmeyer and Andrus onto the method invention of Fraivillig in order to bond the heat sink to the substrate by a thermally activated bonding material, etc.

It is also noted that a related Figs.1-2 of Hoffmeyer depicts a heat sink assembly includes heat sink 22 that is bonded to a second surface of bond film 26 or 28 by means of bonding adhesive.

As applied to claim 2, noting in light of Fraivillig's discussion at col. 5, lines 38-40 and col. 6, lines 39-55, which discloses the temperature range and the modification of the temperature range for better bonding result.

As applied to claims 6-7, Fraivillig discloses the limitation of claim 6 (see the discussion at col. 5, lines 60-67), and limitation of claim 7(see col. 6, lines 4-9).

As applied to claims 8-9 noting the Hoffmeyer discloses limitation of these claims where the bonding adhesive includes two adhesive layers 26, 28 and a dielectric layer 52 (see Fig. 1 and the discussed at col. 8, lines 20-21), further, Andrus discloses the same see col. 2, lines 42-45.

As applied to claim 10, regarding the bond film includes ceramic powder filler. It would have been an obvious matter of design choice to choose the bond film having the above configurations, since applicant has not disclosed that the above claimed feature is critical and patentable distinguishing features and it appears that the invention would

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perform equally well with the type of bonding adhesive as provided by either of the prior art reference.

As applied to claims 11-12, it is inherently that providing a circuit substrate and separating them as to form a plurality of circuit before mounting as adhering an associates component thereto. Furthermore, it would have been an obvious matter of design choice to form a separating process prior to the adhering set forth in claim 12 so as to form each individual printed circuit, since applicant has not disclosed that such process as discussed above is critical and patentable distinguishing features and it appears that the invention would perform equally well with the teaching of forming at least one printed circuit as disclosed by either of the prior art references.

Response to Arguments

3. Applicant's arguments with respect to rejected claims have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

4. Claims 4-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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5. This application contains claims 13-24 which drawn to an invention nonelected.

A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited for their teaching of "heat sink manufacturing method".


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Trinh whose telephone number is (571) 272-4569. The examiner can normally be reached on Monday -Thursday 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on (571) 272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

mt
7/7/06


MINH TRINH
PRIMARY EXAMINER